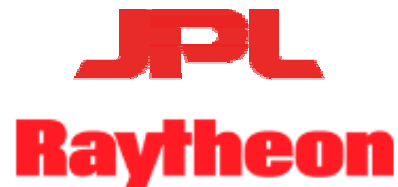

*TOPEX/POSEIDON PROJECT SATELLITE/SENSORS
PERFORMANCE CHARACTERISTICS WORKSHOP #9*

POD/MOE PERFORMANCE SUMMARY

Robert F. Meyer

PVT

August 8, 2000





Contents



-
- **POE/MOE Comparison Validation and Delivery**
 - **Process and Status**
 - **MOE Daily Fidelity and Results**
 - **Process and Status**
 - **Notable Events and Anomalies**



POE/MOE Comparison



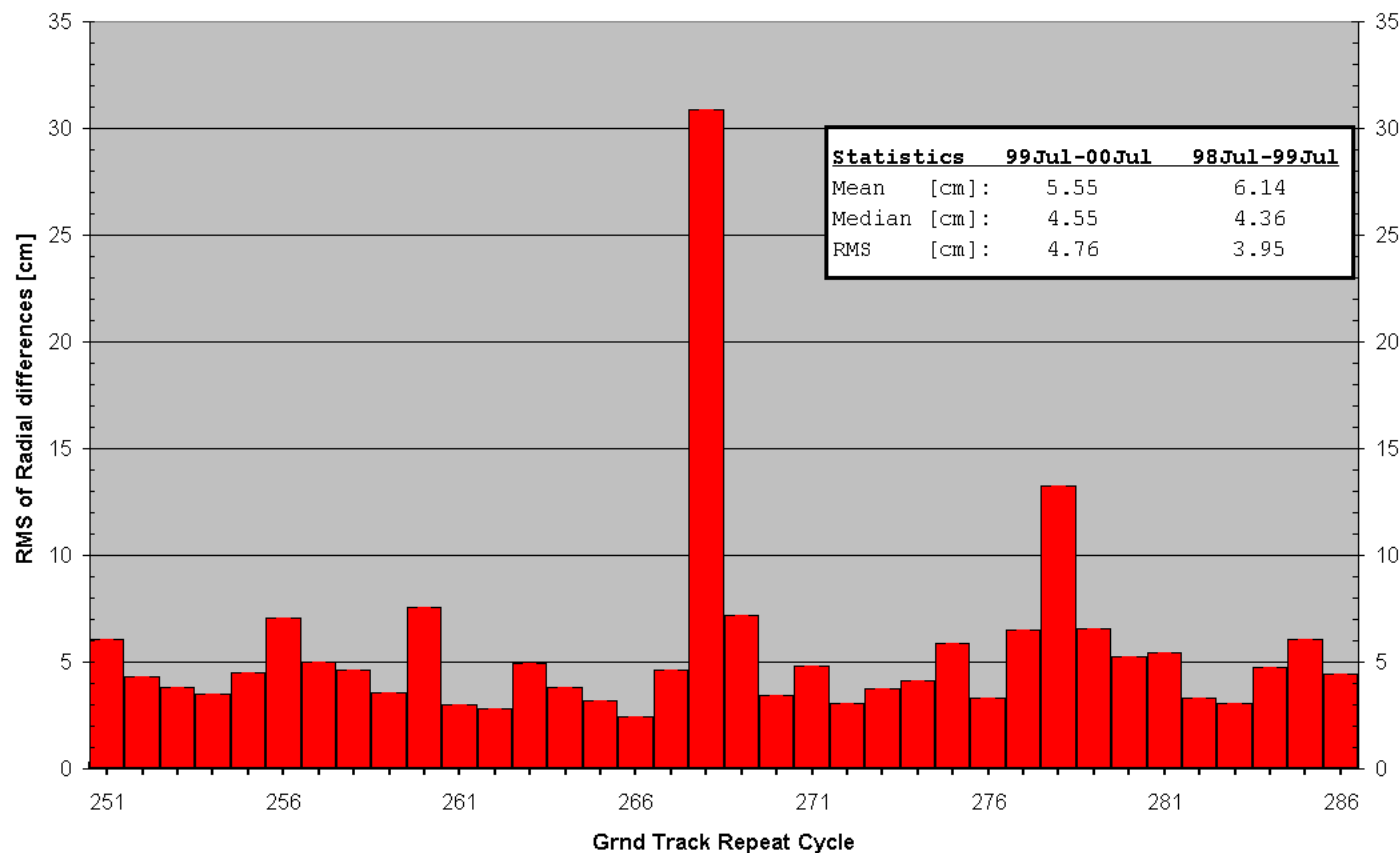
- **POE Cycles: 251-286 [07 Jul 1999 – 28 Jun 2000]**
 - 35 cycles delivered
 - Delivery ~30 days out-of-phase with current cycle
- **“Goodness-of-fit”: NASA GSFC POE differenced with MOE**
Height (H), Cross Track (C), Along Track (L) values
- **Focus on Radial (H) differences**



POE/MOE Comparison

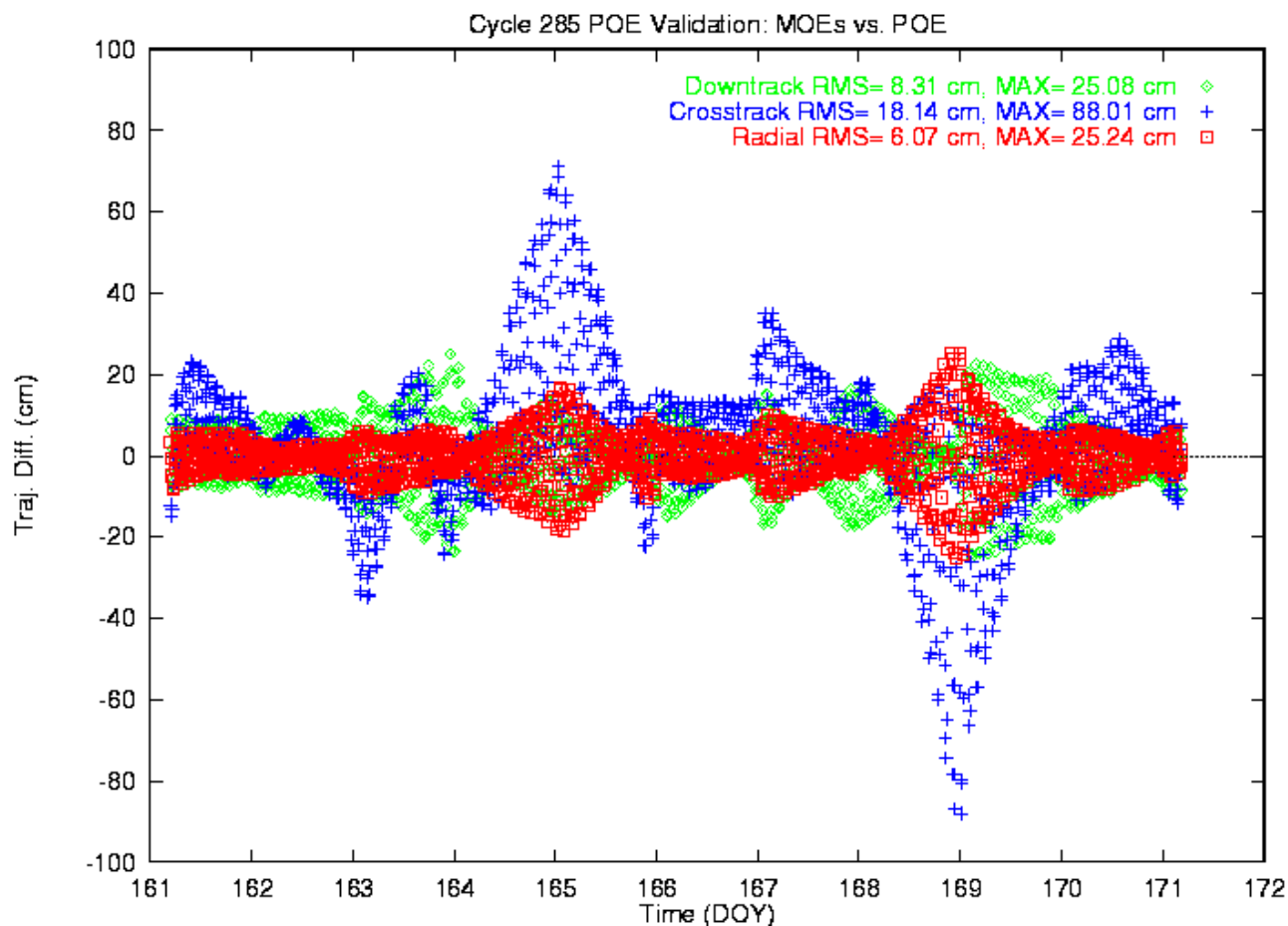


Comparison of NASA POEs and JPL MOE
RMS Radial Differences [cm]





POE/MOE Comparison



Cycle 285



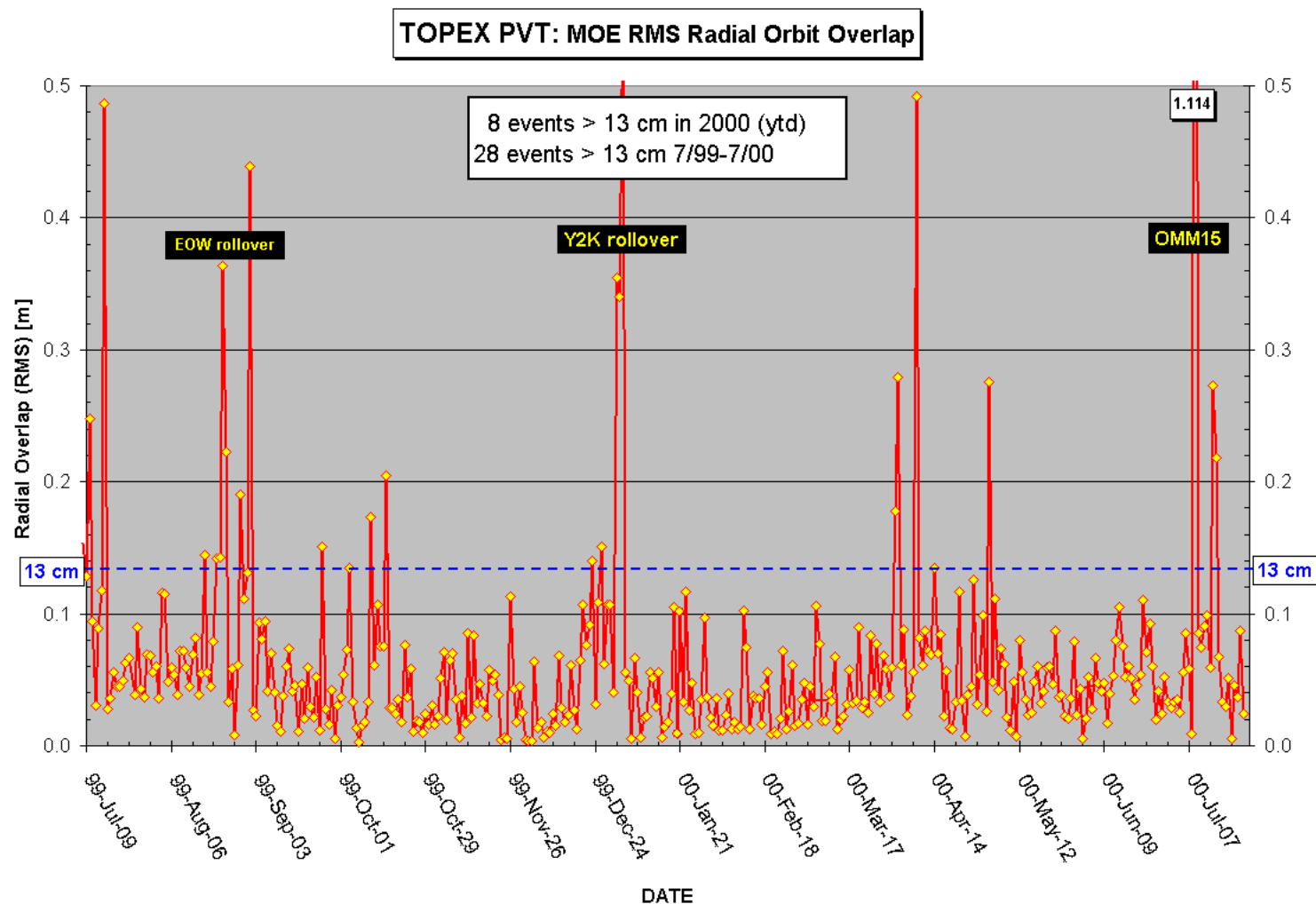
MOE Process



- **Daily 'cron' process on HP-UX host 'mud'**
- **Sequence:**
 - **Process GPS satellite orbits and clocks from global ground station measurements ["-ggn_as"]**
 - **Process SLR-only: TOPEX 3-day orbit reconstruction overlapped with previous day reconstruction [72-hr 'orbits']**
 - **GPS+SLR combination: TOPEX 1-day orbit reconstruction overlapped with previous day reconstruction [30-hr 'orbits']**
- **Delivery preference given to GPS+SLR overlap reconstruction given tolerance < 12.5 cm Radial RMS overlap**



MOE Process + Results





POE/MOE Events & Anomalies



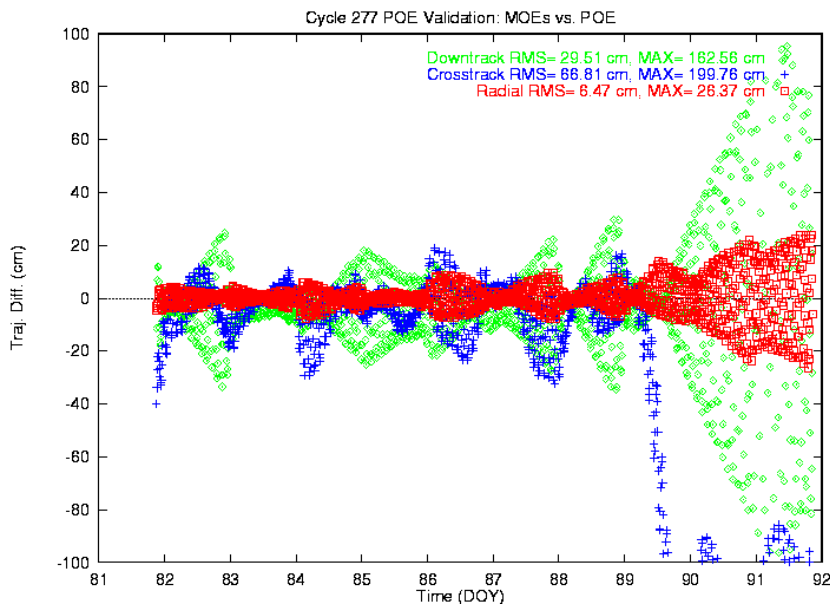
- Y2K rollover experienced excessive overlap differences (both POE/MOE)
- Paucity of SLR data a significant factor in poor reconstructions
- Poor quality POE Cycle comparisons:

<u>Cycle</u>	<u>Comment</u>
268-269	EOY rollover: low quantity/ low quality(?) SLR data (only)
277	MOE events at minima in SLR data quantity:
278	MOE events at minima in SLR data quantity:

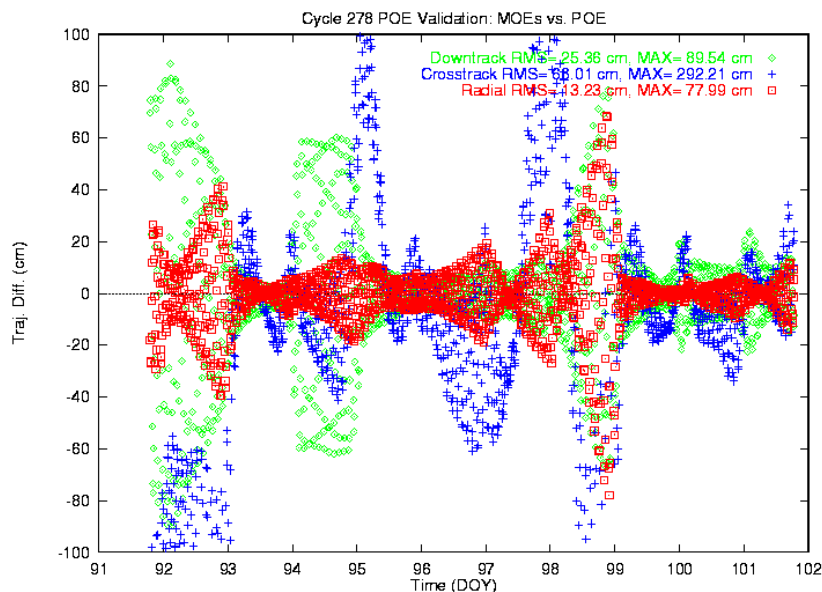
Topex/Poseidon Satellites/Sensors Performance Workshop #9
POD/MOE Performance Summary



POE/MOE Events & Anomalies



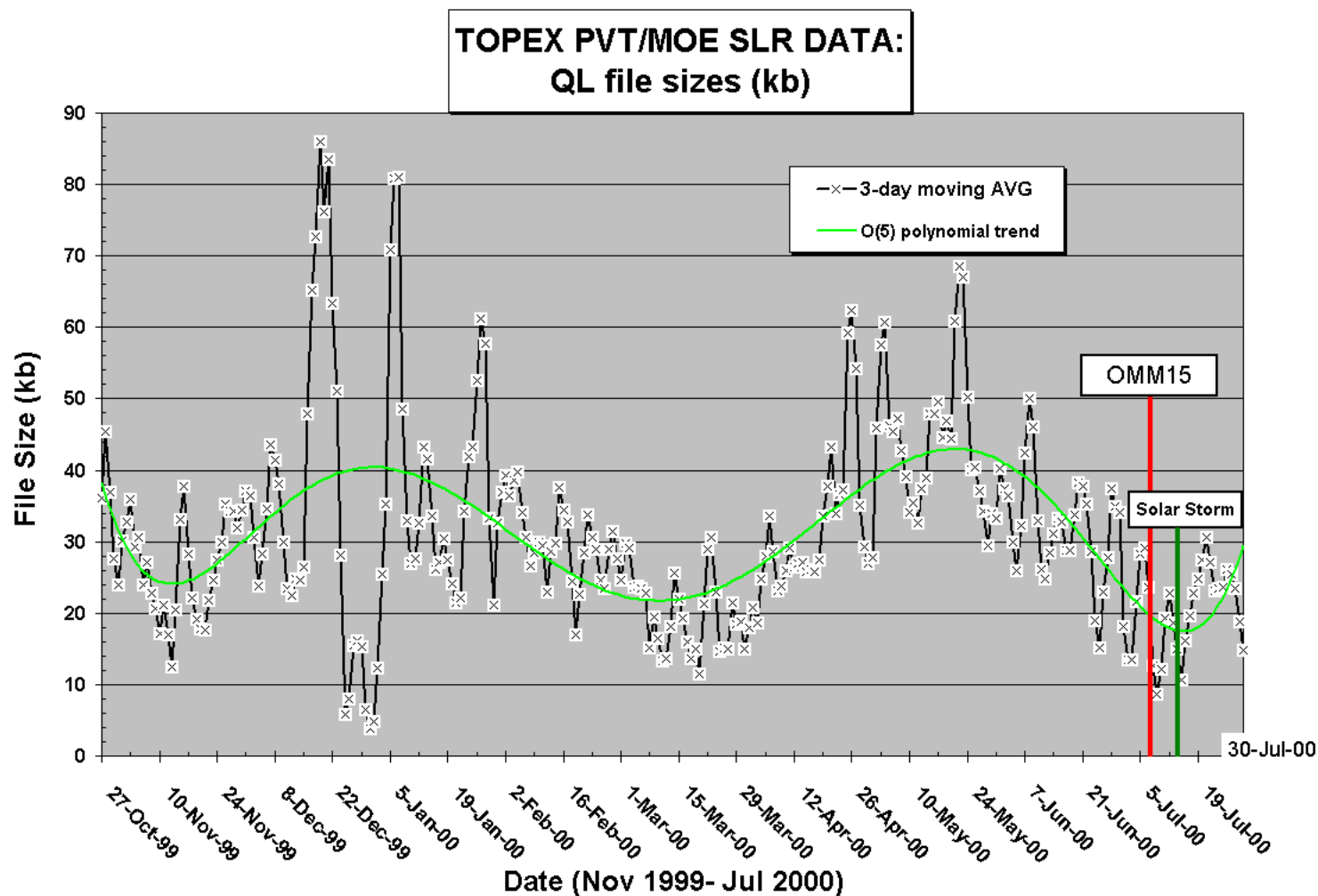
Cycle 277



Cycle 278



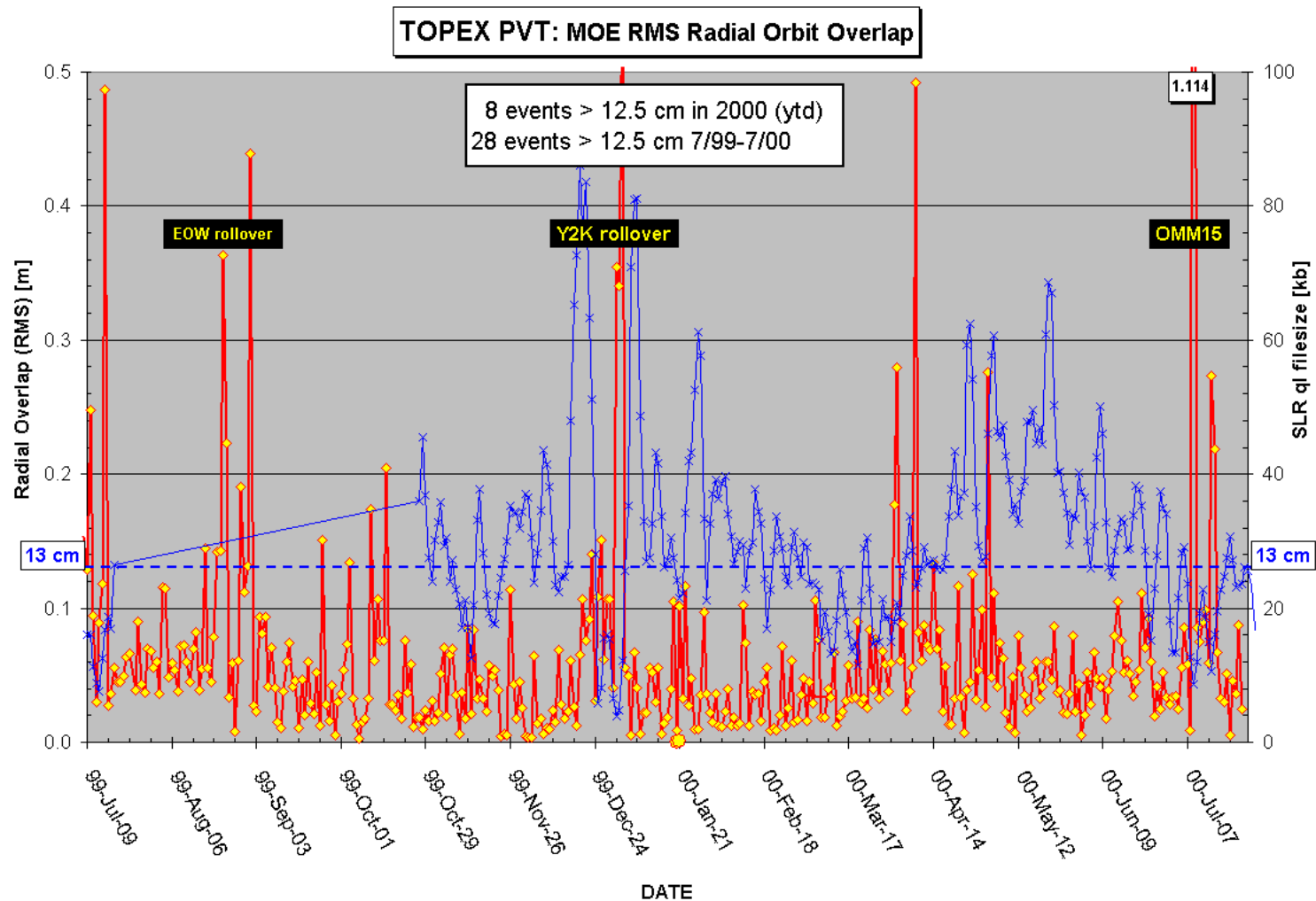
POE/MOE Events & Anomalies



Topex/Poseidon Satellites/Sensors Performance Workshop #9
POD/MOE Performance Summary



POE/MOE Events & Anomalies





Dénouement



- **MOE results meet requirements:**
 - **20 of 28 > 13 cm RMS Radial overlaps occur 99Jul-00Jan**
- **POE-MOE validation is good when exclude Y2K rollover**
 - **One poor event: Cycle 278 00apr01, 00apr08**
(RMS Radial Diff. = 2 cm when exclude early 99 and Y2K events)
- **MOE results strongly correlate with quantity of SLR data**
- **Solar Activity during Solar Cycle 23 having impact on GPS data.**